

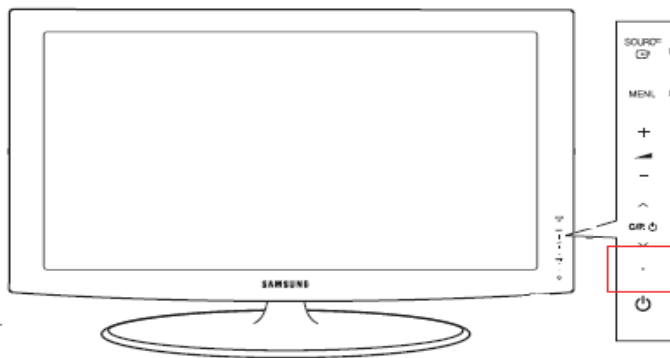
4. Troubleshooting

4-1. Troubleshooting

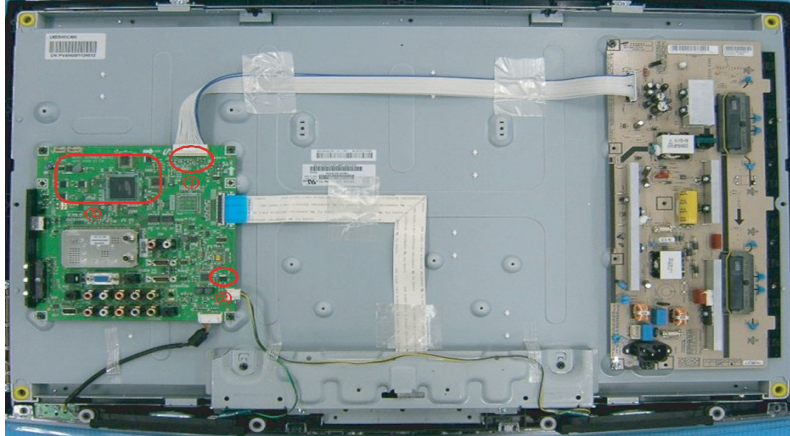
1. Check the various cable connections first.
 - Check to see if there is a burnt or damaged cable.
 - Check to see if there is a disconnected or loose cable connection.
 - Check to see if the cables are connected according to the connection diagram.
2. Check the power input to the Main Board.
3. Check the Power input to the FRC(Frame Rate Conversion) Board.
 Check internal Pattern both of FRC and FBE3 if there is some picture noise.
 FRC: Factory mode(MUTE - BUTTON 1 - BUTTON 8 - BUTTON 2 - Power on) -> FRCM -> TP After DDR Press right button of Remocon.
 FBE3: Factory mode(MUTE - BUTTON 1 - BUTTON 8 - BUTTON 2 - Power on) -> FBE -> Patt Sel -> Press right button of Remocon.
 Case1: FBE3 ok,FRC NG: change the FRC Board Case2: FBE3 NG: change the main Board.

Check the LED lamp for source button on front.

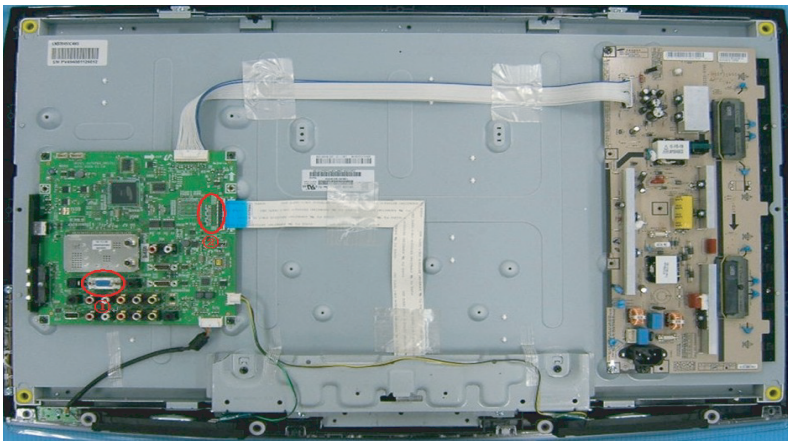
If this LED blink 100mS frequently then FRC board is defective(communication problem via Main board)
 in this case change the FRC board.



4-1-1. No Power

Symptom	- The LEDs on the front panel do not work when connecting the power cord. - The SMPS relay does not work when connecting the power cord. - The units appears to be dead.
Major checkpoints	The IP relay or the LEDs on the front panel does not work when connecting the power cord if the cables are improperly connected or the Main Board or SMPS is not functioning. In this case, check the following: - Check the internal cable connection status inside the unit. - Check the fuses of each part. - Check the output voltage of SMPS. - Replace the Main Board.
Diagnostics	 <pre> graph TD Q1[LAMP off, power indicator LED red color?] -- No --> A1[Check a connection a power cable.] Q1 -- Yes --> Q2[1 Does proper DC 13V appear at Pin 9,10,11 of CN2001?] Q2 -- No --> A2[Change a Assy PCB Power.] Q2 -- Yes --> Q3[2 Does proper DC A3.3V appear at R2028?] Q3 -- No --> A3[Check a IC2001 Change a main PCB ass'y] Q3 -- Yes --> Q4[3 Does proper DC 5V, 3.3V 1.25V, 2.5V, 1.9V appear at BD2004, BD2121, C2105, R1218, BD2400?] Q4 -- No --> A4[Check a IC2010, IC2009, IC2007, IC2004 Change a main PCB ass'y] Q4 -- Yes --> Q5[A power is supplied to set?] Q5 -- No --> A5[Check a other function. (No picture part) Replace a lcd panel.] </pre>
Caution	Make sure to disconnect the power before working on the IP board.

4-1-2. No Video (Analog PC signal)

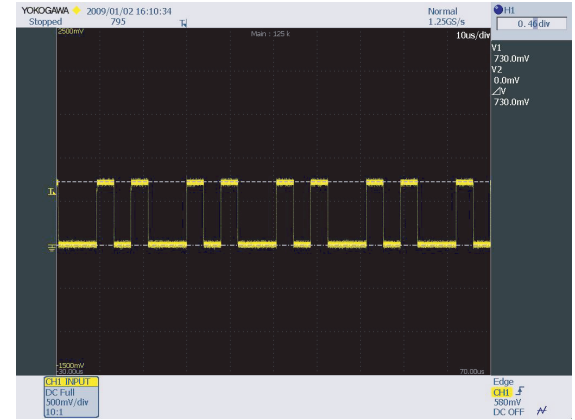
Symptom	Audio is normal but no picture is displayed on the screen.
Major checkpoints	- Check the PC source - Check the SEMS12 - This may happen when the LVDS cable connecting the Main Board and the Panel is disconnected.
Diagnostics	 <pre> graph TD A[Power Indicator is off. Lamp on, no video.] -- Yes --> B[Check a PC source and check the connection of DSUB cable?] B -- No --> C[Input a analog PC signal and connected cable(DPMS).] B -- Yes --> D[1 Does the signal appear at BD5013, BD5014, BD5015(R,G,B)?] D -- No --> E[PC cable. Change a PC cable. Change a main PCB ass'y.] D -- Yes --> F[2 Does the digital data appear at the output of LVDS Signal?] F -- No --> G[Check a IC4010 Change a main PCB ass'y] F -- Yes --> H[Check a LVDS cable? Replace a lcd panel?] H -- No --> I[Please, Contact Tech support.] </pre> Power Indicator is off. Lamp on, no video. Yes Check a PC source and check the connection of DSUB cable? No Input a analog PC signal and connected cable(DPMS). Yes 1 Does the signal appear at BD5013, BD5014, BD5015(R,G,B)? No PC cable. Change a PC cable. Change a main PCB ass'y. Yes 2 Does the digital data appear at the output of LVDS Signal? No Check a IC4010 Change a main PCB ass'y Yes Check a LVDS cable? Replace a lcd panel? No Please, Contact Tech support.
Caution	Make sure to disconnect the power before working on the IP board.

WAVEFORMS

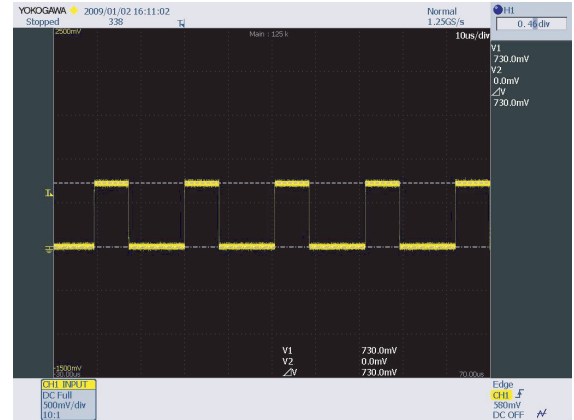
1

R,G,B Output Signal

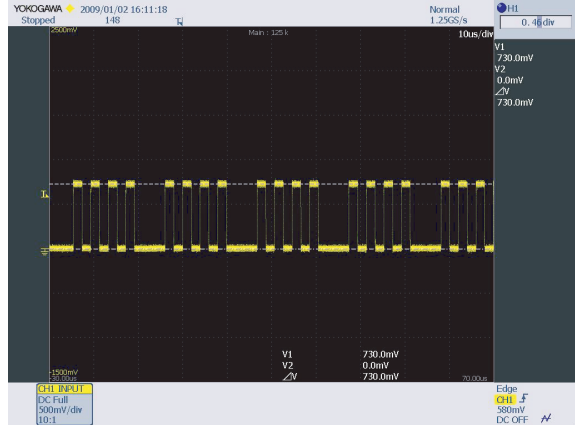
*PC_R Signal



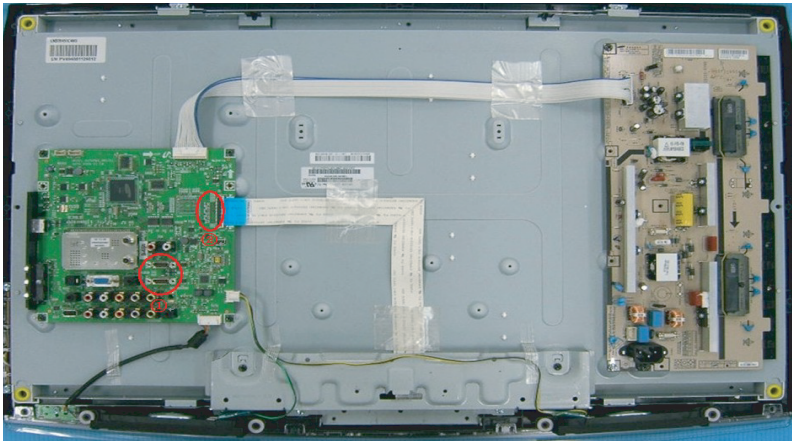
*PC_G Signal



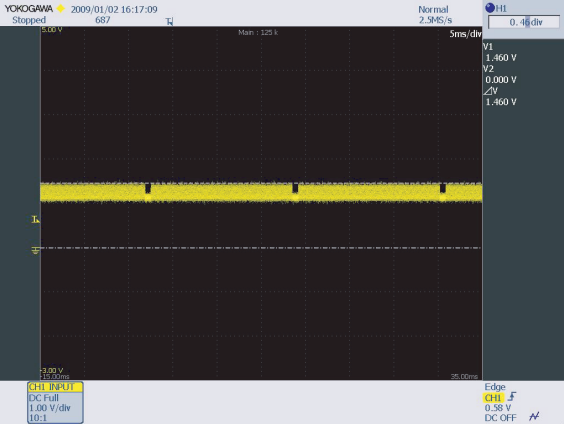
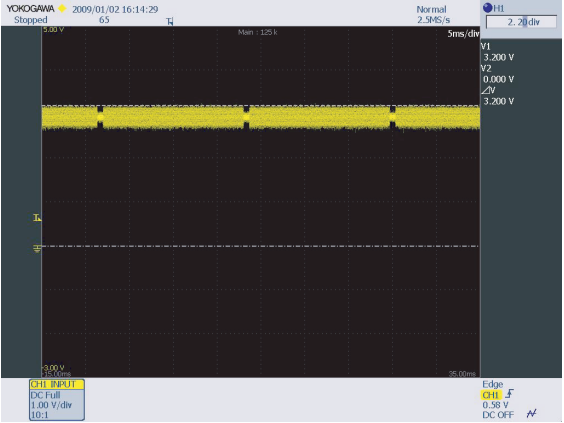
*PC_B Signal



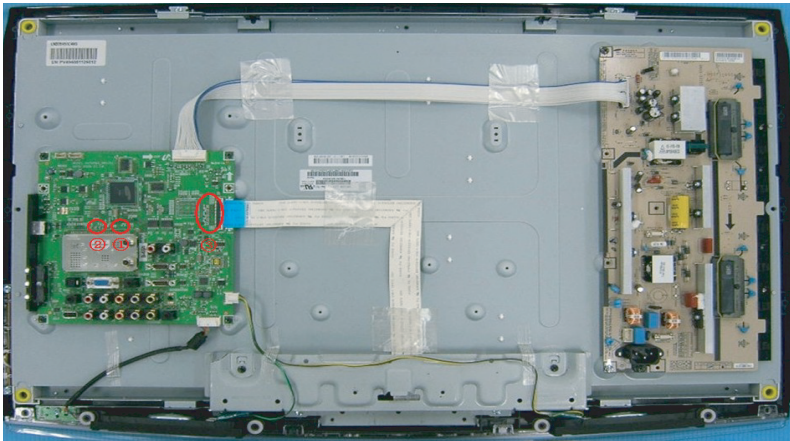
4-1-3. No Video (HDMI - Digital Signal)

Symptom	Audio is normal but no picture is displayed on the screen.
Major checkpoints	- Check the HDMI source - Check the SEMS12 - This may happen when the LVDS cable connecting the Main Board and the Panel is disconnected.
Diagnostics	 <pre> graph TD Start[Power Indicator is off. Lamp on, no video.] -- Yes --> Q1{1 Check the connection of HDMI cable?} Q1 -- No --> A1[Input a HDMI cable.] Q1 -- Yes --> Q2{2 Does the digital data appear at output of LVDS Signal?} Q2 -- No --> A2[Check a IC4010 Change a main PCB ass'y.] Q2 -- Yes --> Q3[Check the LVDS cable? Replace the LCD panel?] Q3 -- No --> A3[Please, Contact Tech support] </pre>
Caution	Make sure to disconnect the power before working on the IP board.

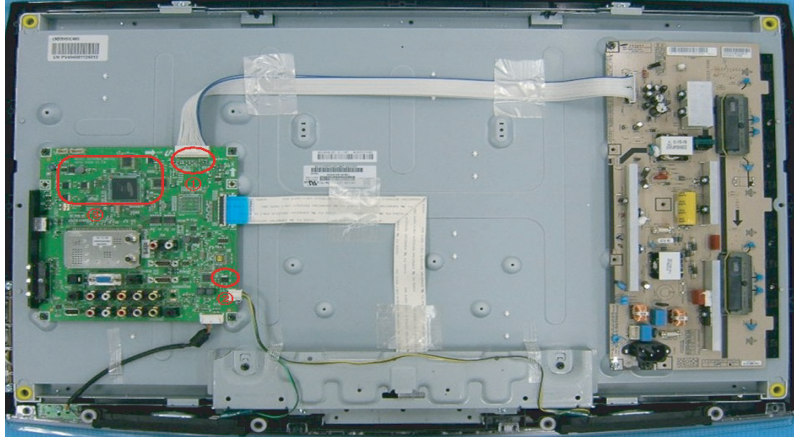
WAVEFORMS

1	Signal of HDMI(Data)
	
2	Digital Output Data
	

4-1-4. No Video (Tuner_CVBS)

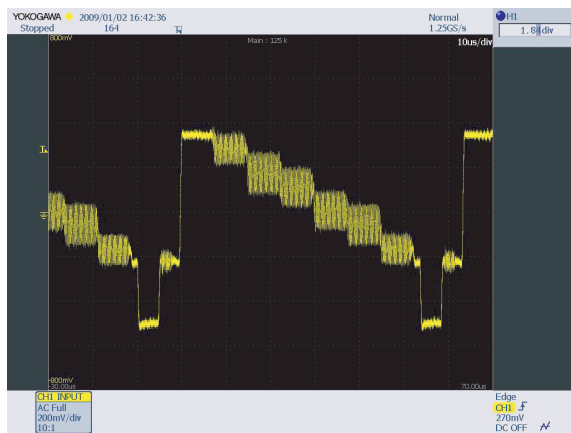
Symptom	Audio is normal but no picture is displayed on the screen.
Major checkpoints	- Check the Tuner CVBS source - Check the SEMS12 - This may happen when the LVDS cable connecting the Main Board and the Panel is disconnected.
Diagnostics	 <pre> graph TD Start[Power Indicator is off. Lamp on, no picture.] -- No --> RF[Connect the RF cable and check RF signal.] Start -- Yes --> Q1{1 Does the signal appear at C5026?} Q1 -- No --> Bplus[Check a B+ voltage (#4 of Tuner) 5V, change a main PCB ass'y.] Q1 -- Yes --> Q2{2 [4] Does the signal appear at pin 10 of TU5003?} Q2 -- No --> TU5003[Check a TU5003 Change a main PCB ass'y.] Q2 -- Yes --> Q3{3 Does the digital data appear at the output of LVDS Signal?} Q3 -- No --> IC4010[Check a IC4010 Change a main PCB ass'y.] Q3 -- Yes --> Q4{Check the LVDS cable? Replace the LCD panel?} Q4 -- No --> Support[Please, Contact Tech support.] </pre>
Caution	Make sure to disconnect the power before working on the IP board.

4-1-5. No Video (Tuner_DTV)

Symptom	Audio is normal but no picture is displayed on the screen.
Major checkpoints	- Check the Tuner DTV source - Check the SEMS12 - This may happen when the LVDS cable connecting the Main Board and the Panel is disconnected.
Diagnostics	 <pre> graph TD A[Power Indicator is off. Lamp on, no picture.] -- No --> B[Connect the RF cable and check RF signal.] A -- Yes --> C{1 Does the signal appear at C5026?} C -- No --> D[Check a B+ voltage (#4 of Tuner) 5V, change a main PCB ass'y.] C -- Yes --> E{4 [4] Does the signal appear at pin 17~27 of TU5003?} E -- No --> F[Check a TU5003 Change a main PCB ass'y.] E -- Yes --> G{3 Does the digital data appear at the output of LVDS Signal?} G -- No --> H[Check a IC4010 Change a main PCB ass'y.] G -- Yes --> I[Check the LVDS cable? Replace the LCD panel?] I -- No --> J[Please, Contact Tech support.] </pre>
Caution	Make sure to disconnect the power before working on the IP board.

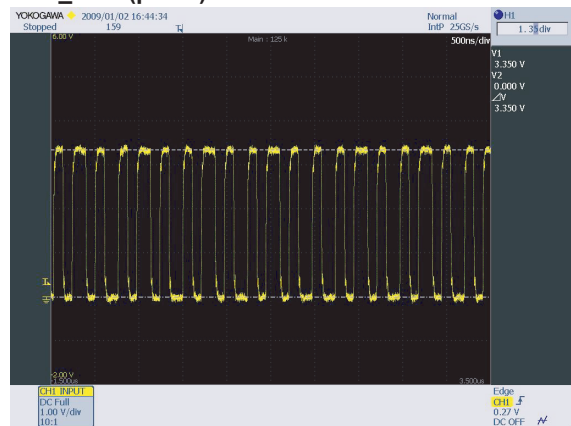
WAVEFORMS

2 CVBS Output Signal

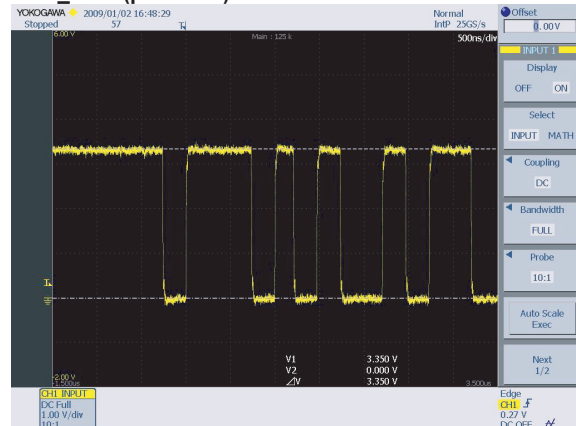


4 Tuner_DTV OutPut Signal

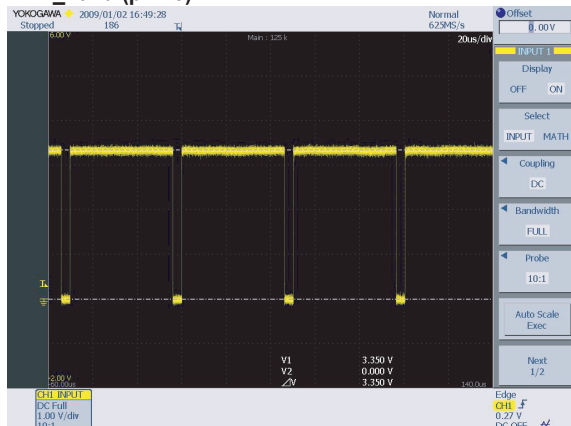
*DTV_CLK (pin27)



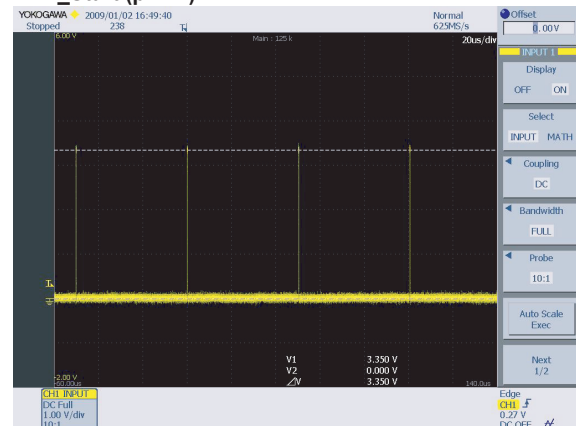
*DTV_Data (pin19~26)



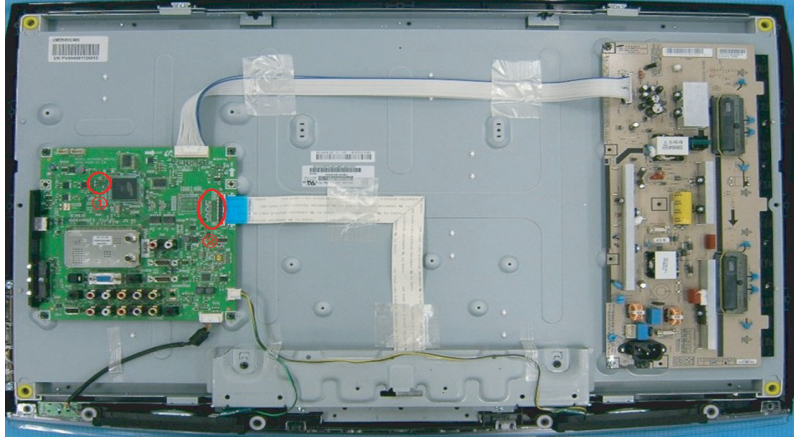
*DTV_Valid (pin18)



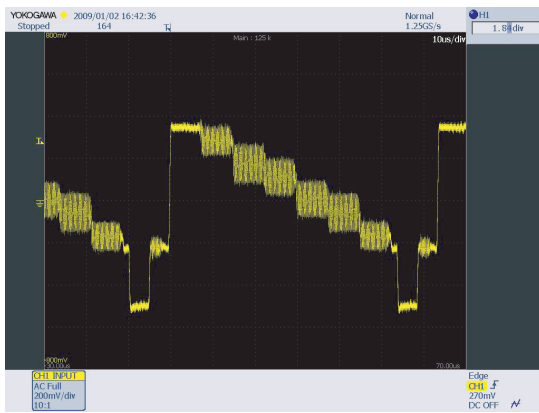
*DTV_Start (pin17)



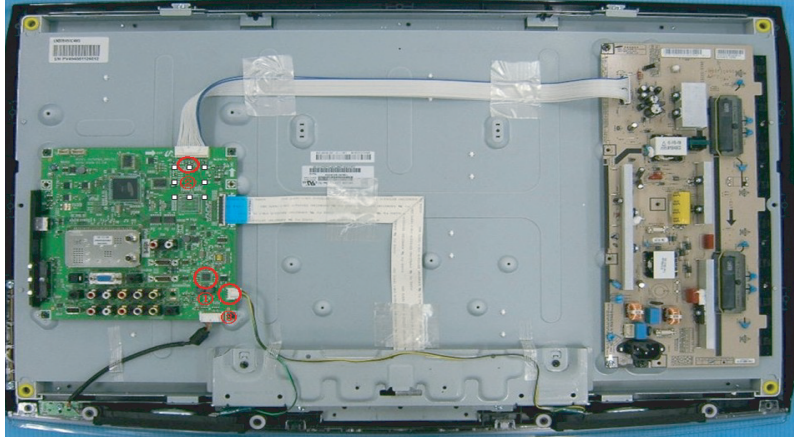
4-1-6. No Picture (Video_CVBS)

Symptom	Audio is normal but no picture is displayed on the screen.
Major checkpoints	- Check the Video Source - Check the SEMT01(MT8226) - This may happen when the LVDS cable connecting the Main Board and the Panel is disconnected.
Diagnostics	 <pre> graph TD A[Power Indicator is off. Lamp on, no picture.] -- No --> B[Check a A/V cable and video signal.] A -- Yes --> C[1 Does the signal appear at C4051(AV1)/C4019(AV2)?] C -- No --> D[Check a connection harness.] C -- Yes --> E[2 Does the digital data appear at the output of LVDS Signal?] E -- No --> F[Check a IC4010 Change a main PCB ass'y] E -- Yes --> G[Check a LVDS cable? Replace lcd panel?] G -- No --> H[Please, Contact Tech support.] </pre>
Caution	Make sure to disconnect the power before working on the IP board.

WAVEFORMS

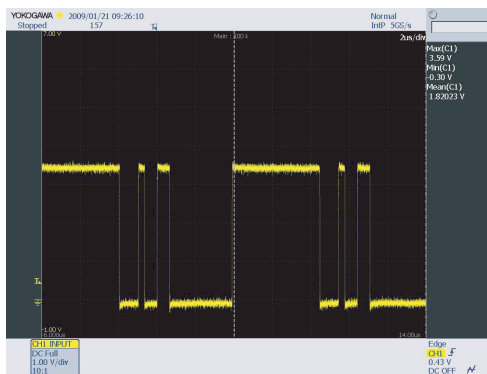
1**AV_CVBS Output Signal**

4-1-7. No Sound

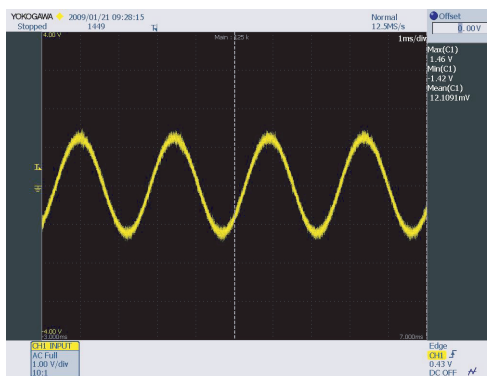
Symptom	Audio is normal but no picture is displayed on the screen.
Major checkpoints	- Check the RF Source - Check the SEMT01(MT8226) - This may happen when the LVDS cable connecting the Main Board and the Panel is disconnected.
Diagnostics	 <pre> graph TD Start[Picture is display, no sound.] -- No --> Action1[Connect a sound cable. control a volume.] Start -- Yes --> Q1{1 Does the signal appear at pin #10,#11,#12,#56(AUSD,AUWS, AUSCK,AUMCKO) of IC9002?} Q1 -- No --> Action2[Check a connection harness and headphone jack./Side AV Check Sound Processor IC4010] Q1 -- Yes --> Q2{2 Check the DC 12V BD2310 of IC9002?} Q2 -- No --> Action3[Check a B12V Line. Change a main PCB ass'y.] Q2 -- Yes --> Q3{3 Does the sound data appear at TP L-,L+,R-,R+?} Q3 -- No --> Action4[Please, Contact Tech support.] Q3 -- Yes --> Action5[Replace the speaker ass'y?] </pre>
Caution	Make sure to disconnect the power before working on the IP board.

WAVEFORMS

1 I2C Data



3 Speaker out



4-2. Alignments and Adjustments

4-2-1. General Alignment Instruction

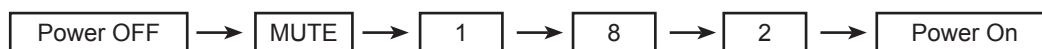
1. Usually, a color LCD-TV needs only slight touch-up adjustment upon installation.
Check the basic characteristics such as height, horizontal and vertical sync.
2. Use the specified test equipment or its equivalent.
3. Correct impedance matching is essential.
4. Avoid overload. Excessive signal from a sweep generator might overload the front-end of the TV. When inserting signal markers, do not allow the marker generator to distort test result.
5. Connect the TV only to an AC power source with voltage and frequency as specified on the backcover nameplate.
6. Do not attempt to connect or disconnect any wire while the TV is turned on. Make sure that the power cord is disconnected before replacing any parts.
7. To protect against shock hazard, use an isolation transformer.

4-3. Factory Mode Adjustments

4-3-1 Entering Factory Mode

To enter 'Service Mode' Press the remote -control keys in this sequence :

- If you do not have Factory remote - control



4-3-2 How to Access Service Mode

Using the Customer Remote

1. Turn the power off and set to stand-by mode
2. Press the remote buttons in this order; POWER OFF-MUTE-1-8-2-POWER ON to turn the set on.
3. The set turns on and enters service mode. This may take approximately 20 seconds.
4. Press the Power button to exit and store data in memory.
- If you fail to enter service mode, repeat steps 1 and 2 above.
5. Initial SERVICE MODE DISPLAY State

Option
ADC/WB
Control
Advanced : 0->0->0->0->EXIT
Expert
T-CRLIBRFC-xxxx (FHD) , T-CRLIBRHC (HD) T-CRLIBRS-xxxx DTP-LP-0144-01 DTP-LP-App-0126-01 OPTION : E030 01 ADC : HDMI COMP PC AV EDID : FAIL/SUCCESS HDCP : FAIL/SUCCESS Build Date : Month-day-year Date Of Purchase

* How to enter the hidden factory mode.

- a. into the factory mode
- b. move the tap to Advanced
- c. key input : 0 + 0 + 0 + 0

** hidden menu : Advanced

6. Buttons operations withn Service Mode

Menu	Full Menu Display/Move to Parent Menu
Direction Keys ▲/▼	Item Selection by Moving the Cursor
Direction Keys ◀/▶	Data Increase / Decrease for the Selected Item
Source	Cycles through the active input source that are connected to the unit

4-3-3 Factory Data

Option	Factory Name	Data	Range
	Factory Reset	-	
	Type	32L6AFOC	19D6TH0C,19I6TH0C,22D6TH0C,22L6TH0C, 22I6TH0C, 26D6TH0C,26L6AH0C, 32A6AH0C,32L6AH0C,32D6AH0C, 37L6AH0C,37I6AH0C,40L6AH0C, 32A6AFOC,32L6AFOC, 32D6AFOC, 37L6AFOC,37D6AFOC,40A6AFOC, 40L6AFOC,40D6AFOC,46A6AFOC, 46L6AFOC,46D6AFOC, 52A6AFOC, 52L6AFOC
	Model	LB530	LB350/LB450/LB460/LB530/LB650
	TUNER	Auto	Auto/Sem_SL/Alps_SL
	Region	BR	BR
	DDR	SAMSUNG	SAMSUNG/Etron
	Light Effect	Off	Off/On
	Init Color System	-	-

ADC/WB	Factory Name
	ADC ADC Tarhet ADC RESULT WB

ADC	Factory Name	Data	Range
	AV Calibration	Success	Failure/Success
	Comp Calibration	Success	Failure/Success
	PC Calibration	Success	Failure/Success
	HDMI Calibration	Success	Failure/Success

ADC Target	Factory Name	Data	Range
	1st_AV_Low	18	0 ~ 255
	1st_AV_High	220	0 ~ 255
	1st_AV_Delta	1	0 ~ 255
	1st_Comp_Low	16	0 ~ 255
	1st_Comp_High	235	0 ~ 255
	1st_Comp_Delta	1	0 ~ 255
	1st_PC_Low	2	0 ~ 255
	1st_PC_High	253	0 ~ 255
	1st_PC_Delta	1	0 ~ 255
	2nd_Low	1	0 ~ 255
	2nd_High	235	0 ~ 255
	2nd_Delta	1	0 ~ 255

ADC RESULT	Factory Name	Mode				Range
		AV	Component	PC	HDMI	
	1st_AV_Gain	128	128	128	128	0 ~ 255
	1st_AV_Offset	140	140	140	140	0 ~ 255
	1st_Comp_Gain	70	70	70	70	0 ~ 255
	1st_Comp_Gain_Cb	70	70	70	70	0 ~ 255
	1st_Comp_Gain_Cr	70	70	70	70	0 ~ 255
	1st_Comp_Offset	127	127	127	127	0 ~ 255
	1st_Comp_Offset_Cb	127	127	127	127	0 ~ 255
	1st_Comp_Offset_Cr	127	127	127	127	0 ~ 255
	1st_PC_R_Gain	88	88	88	88	0 ~ 255
	1st_PC_G_Gain	87	87	87	87	0 ~ 255
	1st_PC_B_Gain	87	87	87	87	0 ~ 255
	1st_PC_R_Offset	125	125	125	125	0 ~ 255
	1st_PC_G_Offset	139	139	139	139	0 ~ 255
	1st_PC_B_Offset	144	144	144	144	0 ~ 255
	2nd_R_Offset	110	113	114	113	0 ~ 255
	2nd_G_Offset	110	113	114	113	0 ~ 255
	2nd_B_Offset	110	113	114	113	0 ~ 255
	2nd_R_Gain	164	143	164	144	0 ~ 255
	2nd_G_Gain	164	143	163	144	0 ~ 255
	2nd_B_Gain	164	143	164	144	0 ~ 255

WB	Factory Name	Mode					Range
		26" _HD	32" (HD/FHD)	37" (HD/FHD)	40" (HD/FHD)	46" FHD	
	Sub Brightness	128	128	128	128	128	0~255
	R_Offset	128	128	128	128	128	0~255
	G_Offset	128	128	128	128	128	0~255
	B_Offset	128	128	128	128	128	0~255
	Sub Contrast	145	(150/133)	(145/136)	(145/133)	133	0~255
	R_Gain	128	128	128	128	128	0~255
	G_Gain	128	128	128	128	128	0~255
	B_Gain	128	128	128	128	128	0~255
	Movie R Offset	125	125	125	125	125	0~255
	Movie B Offset	135	135	135	135	135	0~255
	Movie R Gain	154	154	154	154	154	0~255
	Movie B Gain	46	46	46	46	46	0~255

Control	Factory Name
	EDID Sub Option PDP Option Hotel Option Shop Option Sound Config Option

EDID	Factory Name	Data	Range
	EDID ON/OFF	OFF	ON/OFF
	EDID WRITE ALL	Success	Failure/Success
	EDID WRITE PC	Success	Failure/Success
	EDID WRITE DVI	Success	Failure/Success
	EDID WRITE HDMI1	Success	Failure/Success
	EDID WRITE HDMI2	Success	Failure/Success
	EDID WRITE HDMI3	Success	Failure/Success
	EDID WRITE HDMI4	Failure	Failure/Success
	EDID VERSION	HDMI1.3	HDMI1.2/HDMI1.3

Sub Option	Factory Name	Data	Range
	Mute Time(VIDEO)	4	0~10
	ready	Failure	
	Hotplug	On	On/Off
	Hotplugcontrol	On	On/Off
	Spread Spectrum	-	-
	5-1. Spread Spectrum	Off	On/Off
	5-2. Period	-	-
	5-3. Amplitude	-	-
	5-4. DDR Spread	Off	Off/1% Spread/2% Spread
	Auto Power	On	On/Off
	DDR	-	-
	Arab	Off	
	NT Conversion	Off	
	Mirror	On	On/Off
	HDMI EQ1	Middle	Low/Middle/High/Strong
	HDMI EQ2	Middle	Low/Middle/High/Strong
	HDMI EQ3	Middle	Low/Middle/High/Strong
	HDMI EQ4	-	-
	EER Count	-	-
	WM Calib	-	OK
	Panel Enter Key	-	-
	Panel Display Time	*Hr	-
	CHECKSUM	0x0000	
	View Log	-	-
	Font Data Viewer	-	-
	Dimm Type	EXT	INT/INT_NEG/EXT_NEG/EXT
	Gamma	Off	Off/0.85/0.88/0.90/0.93/0.95/0.98
	Carrier Mute	Off	On/Off
	Anynet+	On	On/Off
	HPD Polarity	-	-
	High Devi	Off	On/Off
	Volume Curve	BR	EU/EA/NT/BR
	HotPlug Delay	9	
	HP Ident	High	
	PC Ident	On	On/Off
	Info Live	-	-
	Watchdog	On	On/Off
	LVDS Format	JEIDA	
	OSD Resolution	1366*768	HD : 1366*768 , FHD : 1920*1080
	Bus Stop	-	-
	OTA Code	-	-
	Panel Auto Setting	-	-
	OTA Duration Test	-	-
	Alternate Del	-	-
	Ignore VCT Version	Off	-

Spread Spectrum	Factory Name	Data	Range
	Spread Spectrum	On	On / Off
	Period	50K	40K / 50K / 60K
	Amplitude	2	0 / 0.5 / 1 / 1.5 / 2
	DDR Spread	2% Spread	Off / 1% Spread / 2% Spread

Shop Option	Factory Name	Data	Range
	Shop Mode	OFF	ON/OFF
	USB DEMO ON(SEC)	-	-
	USB DEMO ON(SEC)	-	-

Sound	Factory Name	Data	Range
	BD Mode	-	-
	A2K Prescale	20	0~40
	BTSC Mono Prescale	44	0~80
	BTSC Stereo Prescale	44	0~80
	SAP Prescale	44	0~80
	BTSC M2S Threshold	0x20	0x00~0x7F
	BTSC S2M Threshold	0x15	0x00~0x7F
	BTSC Pilot NSR On Thr	-	-
	BTSC Pilot NSR Off Thr	-	-
	BTSC Stereo On Thr	0x10	0x00~0x7F
	BTSC Stereo Off Thr	0x18	0x00~0x7F
	SAP Amp On Thr	0x01	0x00~0x7F
	SAP Amp Off Thr	0x00	0x00~0x7F
	SAP NSR On Thr	0x30	0x00~0x7F
	SAP NSR Off Thr	0x45	0x00~0x7F
	Carrier Mute Amp On Thr	-	-
	Carrier Mute Amp Off Thr	-	-
	Carrier NSR On Thr	0x1C	0x00~0x7F
	Carrier NSR Off Thr	0x30	0x00~0x7F
	Carrier Mute Thr high[H-dev]	0x39	0x00~0x7F
	Carrier Mute Thr Low[H-Dev]	0x26	0x00~0x7F
	MP3 Level	-6dB	0~-12dB
	Master Vol	32	0~47
	PWM Modulation	254	0~255
	DRC1 Threshold	0x35	0x00~0xFF
	DRC2 Threshold	0x23	0x00~0xFF
	SPEAKER EQ	On	On/Off
	SC1 Vol	16	0~40
	SC2 Vol	16	0~40
	Audio Delay	20mS	0mS~150mS
	SUB AMP Master Vol	-	-
	SUB AMP PWM Mod	-	-
	SUB DRC Thresh	-	-
	SUB Speaker EQ	-	-

Config Option	Factory Name	Data	Range
	AV Number	2	0 ~ 2
	SVIDEO Number	0	0 ~ 1
	COMP Number	2	0 ~ 2
	HDMI Number	3	0 ~ 4
	SCART Number	0	
	DVI Number	0	0 ~ 1
	HP Number	1	0 ~ 1
	USB PORT	-	
	LNA SUPPORT	ON	On / Off
	MFT OFFSET	-	

Test Pattern	Factory Name	Data	Range
	Master Test Pattern	OFF	
	FBE Test Pattern	OFF	
	LOGIC Test Pattern	OFF	

Advanced	Factory Name
	FBE
	WB Movie
	EPA Standard
	ADJUST
	YC_Delay
	SHARPNESS
	PE
	PQ Others
	Color Space
	EEPROM RESET

WB Movie	Factory Name	Data	Range
	WB Movie	Off	On/Off
	Color Mode	Movie	Movie/Dynamic/Standard
	Color Tone	Cool	Warm2/Cool/Normal/Warm1
	Msub Brigh	128	0~255
	Msub Contr	128	0~255
	W1_RGAIN	149	0~255
	W1_BGAIN	82	0~255
	W1_ROFFS	124	0~255
	W1_BOFFS	130	0~255
	W2_RGAIN	154	0~255
	W2_BGAIN	46	0~255
	W2_ROFFS	125	0~255
	W2_BOFFS	135	0~255
	N_RGAIN	138	0~255
	N_BGAIN	110	0~255
	N_ROFFS	126	0~255
	N_BOFFS	127	0~255
	Movie Contr	100	0~100
	Movie Brigh	45	0~100
	Movie Color	55	0~100
	Movie Sharp	75	0~100
	Movie Tint	50	0~100
	Movie BKLight	10	0~10
	M.Gamma	0.95	"Off/0.85/0.88/0.90/0.93/0.95/0.98/M1/M2/M3/M4"
	M_Sub Gamma	0	-3~3

EPA Standard	Factory Name	Data	Range
	Std Contr	95	0~100
	Std Bright	45	0~100
	Std Sharp	50	0~100
	Std Color	50	0~100
	Std Tint	50	0~100
	Std Backlight	7	0~10

Adjust	Factory Name	Data	Range
	Dynamic Dimming	Off	Off/On
	LNA Plus		
	2-1 RF dB1 Level	3	0~255
	2-2 RF dB2 Level	6	0~255
	2-3 RF dB3 Level	12	0~255
	2-4 RF dB4 Level	31	0~255
	Power Key Protect	Off	Off/On
	Uart Select	Auto Wall	Auto Wall/Debug/MDC/On1/On2
	Debug Mode	Debug Off	Debug Off/Debug Smart/Debug Run Time
	Back End Mute	-	-
	PDP FRC	-	-
	Visual Test	Disable	Disable/Enable
	Standby Mode Time	45Min	2Min/45Min
	Delete alt.ver	2Flash	-
	OTA confirm Time	90Min	2Min/90Min
	OTA limit Time	3Hour	3Min/3Hour
	Dynamic CE	Off	Off/On
	FWC	Off	Off/On
	1080p 48Hz	On	Off/On
	PWM Max	100	1~100
	Quick Start	Off	Off/On
	DTV LNA	Auto	Auto/Off/On
	HDCP Download	Off	-
	USB Download	-	-

YC_Delay	Factory Name	Data	Range
	PAL BG	1	0~3
	PAL DK	1	0~3
	PAL I	1	0~3
	SECAM BG	4	0~7
	SECAM DK	4	0~7
	SECAM L	2	0~7
	NTSC 358	1	0~3
	NTSC 443	1	0~3
	AV PAL	1	0~3
	AV SECAM	7	0~7
	AV NT358	1	0~3
	AV NT443	1	0~3
	AV PAL60	1	0~3
	AV PAL M		
	AV PAL N		

SHARPNESS	Factory Name	Data	Range
	H1 Gain	0x10	0x00~0x3F
	H2 Gain	0x0C	0x00~0x3F
	H3 Gain	0x08	0x00~0x3F
	H4 Gain	0x08	0x00~0x3F
	V1 Gain	0x15	0x00~0x3F
	V2 Gain	0x0C	0x00~0x3F
	H overshoot	0x10	0x00~0xFF
	V overshoot	0x40	0x00~0xFF
	H undershoot	0x10	0x00~0xFF
	V undershoot	0x40	0x00~0xFF
	Coring TH2	0x03	0x01~0x0F
	Coring TH1	0x01	0x01~0x0F

PE	Factory Name	Data	Range
	Skin_x	0x00	0x00~0x0A
	Skin_y	0x01	0x00~0x0A
	B_Slope	0x9A	0x80~0xFF
	DLC_ML	0x90	0x00~0xFF
	DLC_MH	0x90	0x00~0xFF
	DLC_H	0xEB	0x00~0xFF
	Skin_SAT	0x04	0x00~0x0F
	Skin_HUE	0x40	0x00~0x7F
	M_Skin_HUE	0x3F	0x00~0x7F
	M_Skin_x	0x00	0x00~0x0A
	M_Skin_y	0x01	0x00~0x0A
	Mid_color_level	0xAF	0x00~0xFF
	M_mid_color_level	0xA0	0x00~0xFF

PQ Others	Factory Name	Data	Range
	7.5 IRE NTSC 7.5IRE	Off 16	On / Off 0 ~ 60

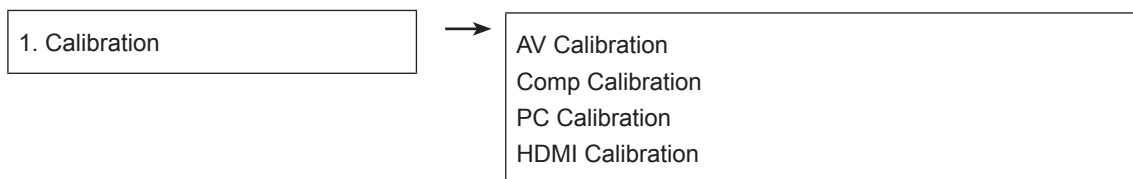
Color Space	Factory Name	Data	Range
	Red Sat	0x16	0x00~0x1E
	Red Hue	0x60	0x00~0x7F
	Green Sat	0x15	0x00~0x1E
	Green Hue	0x70	0x00~0x7F
	Blue Sat	0x1A	0x00~0x1E
	Blue Hue	0x60	0x00~0x7F
	Cyan Sat	0x19	0x00~0x1E
	Cyan Hue	0x50	0x00~0x7F
	Magenta Sat	0x10	0x00~0x1E
	Magenta Hue	0x40	0x00~0x7F
	Yellow Sat	0x15	0x00~0x1E
	Yellow Hue	0x10	0x00~0x7F
	FWC Blue	0x13	0x00~0x1E
	FWC Red	0x0D	0x00~0x1E

EEPROM RESET	Factory Name	Data	Range
	EEPROM RESET	Off	On/Off
	NVR All Clear	Off	On/Off

Expert	Factory Name	Data	Range
	N/D ADJ SOURCE	Off Current	On/Off All/Current

4-4. White Balance - Calibration

4-4-1 White Balance -Calibration

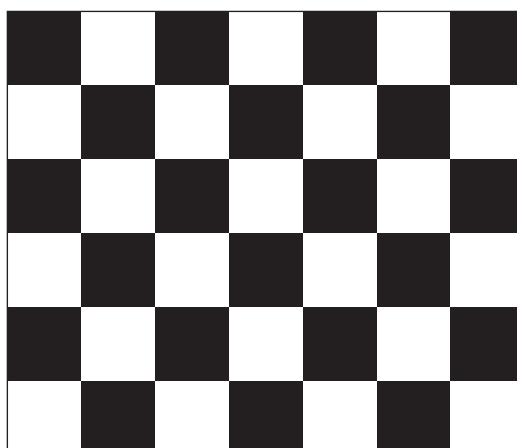


4-4-2 Service Adjustment - You must perform Calibration in the Lattice Pattern before adjusting the White Balance.

■ Color Calibration

Adjust spec.

1. Source : HDMI
2. Setting Mode : 1280*720@60Hz
3. Pattern : Pattern #24 (Chess Pattern)



(Chess Pattern)

4. Use Equipment : CA210 & Master MSPG925 Generator

- Use other equipment only after comparing the result with that of the Master equipment.

Input mode	Calibration	Pattern
CVBS IN (Model_#3)	Perform in NTSC B&W Pattern #24	Lattice
Component IN (Model_#6)	Perform in 720p B&W Pattern #24	Lattice
PC Analog IN (Model_#21)	Perform in VESA XGA (1024x768) B&W Pattern #24	Lattice
HDMI IN	Perform in 720p B&W Pattern #24	Lattice

<Table 1>

■ Method of Color Calibration (AV)

- 1) Apply the NTSC Lattice (N0. 3) pattern signal to the AV IN 1 port
- 2) Press the Source key to switch to "AV1" mode
- 3) Enter Service mode
- 4) Select the "Calibration" menu
- 5) Select the "AV Calibration" menu.
- 6) In "AV Calibration Off" status, press the "▶" key to perform Calibration.
- 7) When Calibration is complete, it returns to the high-level menu.
- 8) You can see the change of the "AV Calibration" status from Failure to Success.

■ Method of Color Calibration (Component)

- 1) Apply the 720p Lattice (N0. 6) pattern signal to the Component IN 1 port
- 2) Press the Source key to switch to "Component1" mode
- 3) Enter Service mode
- 4) Select the "Calibration" menu
- 5) Select the "DTV Calibration" menu.
- 6) In "DTV (Component) Calibration Off" status, press the "▶" key to perform Calibration.
- 7) When Calibration is complete, it returns to the high-level menu.
- 8) You can see the change of the "Comp Calibration" status from Failure to Success.

■ Method of Color Calibration (PC)

- 1) Apply the VESA XGA Lattice (N0. 21) pattern signal to the PC IN port
- 2) Press the Source key to switch to "PC" mode
- 3) Enter Service mode
- 4) Select the "Calibration" menu
- 5) Select the "PC Calibration" menu.
- 6) In "PC Calibration Off" status, press the "▶" key to perform Calibration.
- 7) When Calibration is complete, it returns to the high-level menu.
- 8) You can see the change of the "PC Calibration" status from Failure to Success.

■ Method of Color Calibration (HDMI)

- 1) Apply the 720p Lattice (N0. 6) pattern signal to the HDMI1/DVI IN port
- 2) Press the Source key to switch to "HDMI1" mode
- 3) Enter Service mode
- 4) Select the "Calibration" menu
- 5) Select the "HDMI Calibration" menu.
- 6) In "HDMI Calibration Off" status, press the "▶" key to perform Calibration.
- 7) When Calibration is complete, it returns to the high-level menu.
- 8) You can see the change of the "HDMI Calibration" status from Failure to Success.

4-4-3 White Balance - Adjustment

	(low light)	(hight light)
3. W/B	Sub Bright R offset G offset B offset	Sub Contrast R gain G gain B gain

(W/B adjustment Condition refer next page)

4-5. White Ratio (Balance) Adjustment

1. You can adjust the white ratio in factory mode (1:Calibration, 3:White-Balance).
2. Since the adjustment value and the data value vary depending on the input source, you have to adjust these in CVBS, Component 1 and HDMI 1 modes.
3. The optimal values for each mode are configured by default. (Refer to Table 1, 2)
It varies with Panel's size and Specification.

- Equipment : CS-210
- Pattern: MIK K-7256 #92 "Flat W/B Pattern" as standard
- Use other equipment only after comparing the result with that of the Master equipment.
- Set Aging time : 60min ↑



- Calibration and Manual setting for WB adjustment.

HDMI : Time #6 720P, Pattern #24 Chessboard Calibration	→ Manual adjustment #92 pattern (720p)
COMP: Time #6 720P, Pattern #24 Chessboard Calibration	→ Manual adjustment at #92 pattern (720p)
CVBS: Time #3 NTSC-J, Pattern #24 Chessboard Calibration	→ Manual adjustment at #92 pattern (NTSC)
PC: Time #21 1024*768, Pattern #24 Chessboard Calibration	→ Manual adjustment at #92 pattern (NTSC)

- If finishing in HDMI mode, adjustment coordinate is almost same in AV/COMP mode.
- White Balance Manual Adjustment

4. Troubleshooting

	CA-210				
		x	y	Y(L)	T(K) + MPCD
CVBS (NTSC)	H/L	272	278	- (Sub_CT:133)	12,000 (+/- 0)
	L/L	272	278	19.7cd/m ² (5.8 Ft - Sub_BR:128)	12,000 (+/- 0)
COMP (720P)	H/L	272	278	- (Sub_CT:140)	12,000 (+/- 0)
	L/L	272	278	19.7cd/m ² (3.5 Ft - Sub_BR:128)	12,000 (+/- 0)
HDMI (720P)	H/L	272	278	- (Sub_CT:140)	12,000 (+/- 0)
	L/L	272	278	19.7cd/m ² (5.8 Ft - Sub_BR:128)	12,000 (+/- 0)

- Adjustment Specification

White Balance : High light (± 3), Low light (± 5)

Luminance : High light ($\pm 0.1\text{Ft/L}$), Low light ($\pm 0.1\text{Ft/L}$)

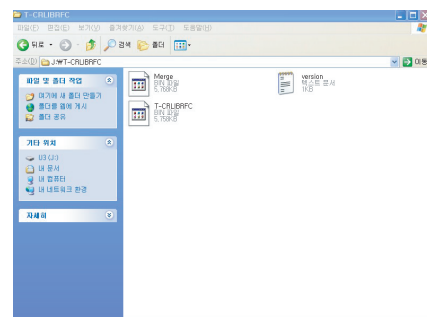
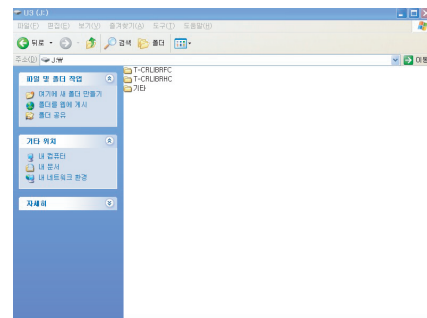
4-6. Servicing Information

4-6-1 USB Download Method

Samsung may offer upgrades for TV's firmware in the future. Please contact the Samsung call center at 1-800-SAMSUNG (7267864) to receive information about downloading upgrades and using a USB drive.

Upgrades will be possible by connecting a USB drive to the USB port located on located on the back of your TV.

1. Insert a USB drive containing the firmware upgrade into the USB port on the Back of the TV.
(USB drive make folder "FHD_"T-CRLIBRFC",
HD_"T-CRLIBRHC" and this folder download micom program.)



2. Insert USB drive.

Menu -> Setup -> SW Update then press the ENTER button.

The message "Scanning for USB. It may take up to 30 seconds." Please be careful to not disconnect the power or remove the USB drive while upgrade is being applied.

The message "Upgrade version XXXX to version XXXX ?

The system would be reset after upgrade."

Press the left, right button to select "OK".

The TV will shut off after completing the firmware upgrade.

Please check the firmware version after the upgrade is complete.

- Upgrade uses USB onlay
- Execute P&P after downloa

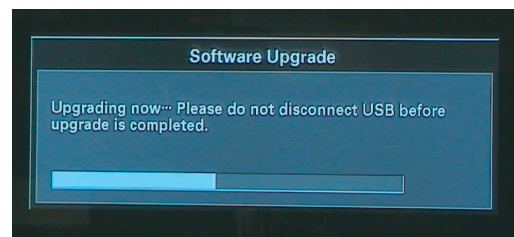
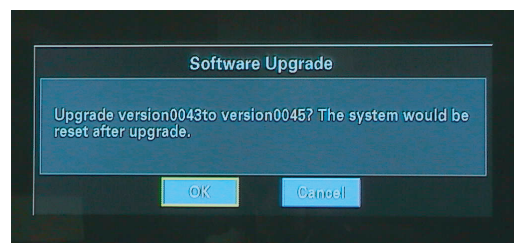
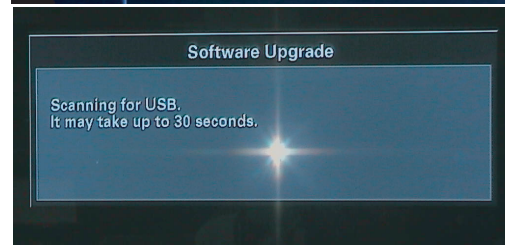
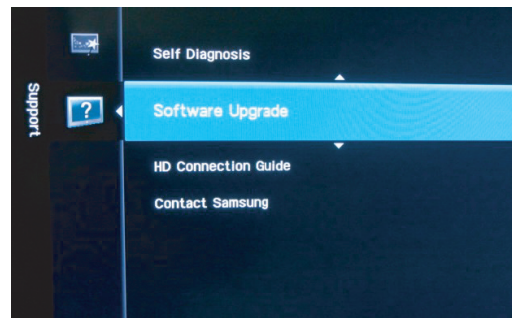
* How to check Program Version

1. To enter Factory mode

2. Check the micom version

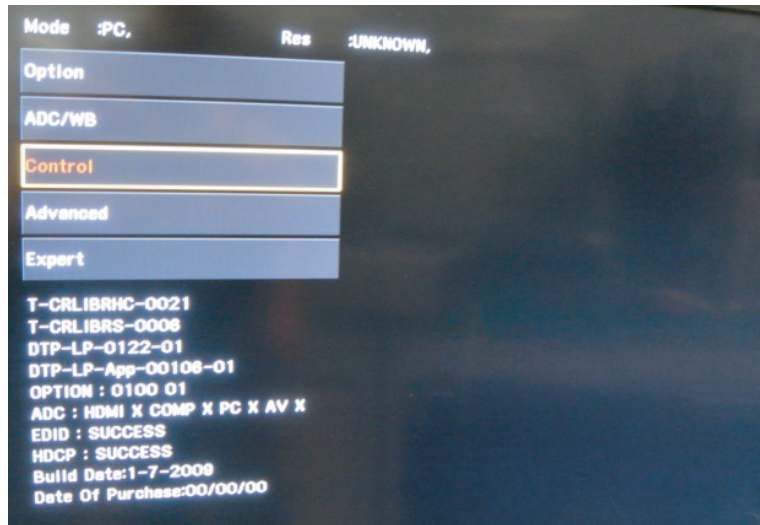
HD : T-CRLIBRHC

FHD : T-CRLIBRFC



4-7. EDID Self-Write Method

1. OSD in case of entering Factory : It's displayed to check if Self write runs normally.



2. How to EDID Self-Write

Enter Factory Mode → EDID → EDID Write On/Off Press right button of Remocon → Choose On

And then All EDID Write Press right button of Remocon

